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Flammulated Owl
Otus flammeolus

Range:
Mountainous areas of western North America from Guatemala to Canada.

Washington Distribution:
Uncommon resident in Washington, east of the crest of the Cascade Mountains (Franklin, Benton, Okanogan, Grant, Yakima, Lincoln, Klickitat, Adams, Spokane, Douglas, Walla Walla, Whitman and Kittitas Counties).
Possibly locally common in appropriate habitat in the Blue Mountains (Goggans, pers. comm.).

Habitat Requirements:
Flammulated owls are found above 914m (3000') in ponderosa pine and grand fir-Douglas fir forests with relatively open canopies (Guenther and Kucera 1978, Jones and Stokes Assn. 1980). Several studies have found this owl primarily associated with mature to old yellow pine stands (Bull and Anderson 1978, Goggans 1986, Linkhart et al. 1986 in Reynolds and Linkhart 1987). Marcot and Hill (1980) found them in stands dominated by Douglas fir with either ponderosa pine or California black oak. These owls apparently require high levels of habitat diversity as well (Goggans 1986). Their home ranges are composed of foraging, nesting, and roosting habitats.

The owls are insectivorous; grasshoppers and moths were the most important prey groups in a study in Oregon (Johnson 1963, Goggans 1986). They forage on the ground, in the air, and on foliage in early seral stages (Thomas et al. 1979), along the edges of clearings, or in open stands of mature and old-growth forests (Goggans 1986; Bull, per. comm.). Grasslands in and adjacent to forest stands are important foraging sites (Goggans 1986).

The owls nest in natural cavities or cavities excavated by other birds. Nest sites are located 2m-12m (7 to 40') high in dead wood of live trees or snags at least 30 cm (12") in diameter (Jones and Stokes 1980, Thomas et al. 1979). Breeding occurs in middle and late seral stages of coniferous forests from late April through early October. The peak nesting period is from mid-June to mid-July (Bent 1961). There are only a few reports of this owl using nest boxes (Bloom 1983).

Flammulated owls may form loose breeding colonies. Up to 10 territorial male owls have been recorded in areas ranging from 1.2ha to 97ha (3-240 acres) in size (Marcot and Hill 1980, Jones and Stokes Assn. 1980). In Oregon, individual

home ranges averaged about 10ha (25 acres) in size (Goggans 1986). Territories are typically found in core areas of mature timber with two canopy layers present. The uppermost canopy layer is formed by trees at least 200 years old. Core areas are near, or adjacent to, clearings of 10 - 80% brush cover (Marcot and Hill 1980, Bull and Anderson 1978).

Day roosts are located in mature mixed confier stands with dense, multi-layered canopies (Goggans 1986, Bull and Anderson 1978). Dense stands presumably provide cover from weather and predators for resting owls, and may form core portions of the owls' territories.

Flammulated owls are presumed to be migratory in the northern part of their range (Balda et al. 1975). In Oregon they arrive at the breeding sites in early May and begin nesting in early June; young fledge in July and August (Goggans 1986; Bull, pers. comm.). In Colorado, the owlets dispersed in late August and the adults in early October (Reynolds and Linkhart 1987).

Limiting Factors:
Availability of suitable nest cavities and/or arthropod prey in ponderosa pine or mixed-conifer forests.

Management Recommendations:
Creation of large areas of even-aged timber is detrimental to flammulated owls. Uneven stands of dense, mature timber located near brushy clearings should be maintained for flammulated owls.

All conifers and hardwoods having natural or excavated cavities in and adjacent to flammulated owl territories should be left undisturbed (Marcot and Hill 1980). At least 8 snags per 40ha (100 acres) should be left to support maximum densities of flammulated owls in ponderosa pine forests (Balda 1975 in Jones and Stokes Assn. 1980). Bull (pers. comm.) recommends leaving more than 8 snags because of competition from other secondary cavity nesters. Snags should be greater than 30cm (12") dbh and greater than 1.8m (6') tall (Thomas 1979).

Future nest snags should be recruited by continually retaining large, over-mature trees in, or adjacent to, suitable flammulated owl habitat (Marcot and Hill 1980). Where snags are lacking, large trees can be topped to promote woodpecker use and cavity formation. Fuelwood collection should be limited where flammulated owls occur because these practices eliminate nest snags.

Brushy areas may provide insect prey and feeding cover when flammulated owls forage near the ground. Therefore, forest practices (e.g. application of herbicide) which remove brush from clearings adjacent to flammulated owl territories should be avoided. Application of insecticides that could reduce insect prey abundance should not occur in flammulated owl home range areas, approximately 305m (1000') from the nest.

Winter (1979) and Marcot and Hill (1980) noted the potential importance of old black oak trees to flammulated owls becuase of their numerous natural cavities. Washington's white oak-conifer forests should be surveyed for these owls.

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Key Points:
Habitat Requirements:
· Associated with high-elevation coniferous forest.
· Nest and roost in mature, multi-storied stands.
· Nest in cavities.
· Can be semi-colonial.
· Insectivorous, forage in open areas.
· Migratory.

Management Recommendations:
· Maintain stands of dense, mature trees near brushy clearings.
· Maintain at least 8 snags > 30 cm dbh and > 1.8m tall per 40 ha; maintain all trees with cavities.
· Ensure snag recruitment.
· Leave brush in clearings near owl territories.
· Do not apply insecticides in areas used by owls.